

WHAT IS CLAIMED IS:

1. A multi-way multiplex communication system comprising:

(a) a subsidiary station covering terminals to each of which an analog line, a basic rate interface (BRI) line and a primary rate interface (PRI) line are connected; and

(b) a base station which assigns the requisite number of time slots to thereby make radio communication with said subsidiary station in dependence on the number of vacant time slots between said subsidiary station and said base station, wherein said base station

(b1) defines a subscriber class which determines an order in using a time slot to make radio communication with a H-channel terminal,

(b2) monitors vacant time slots on receipt of a request of making a call, from said H-channel terminal, and

(b3) controls call connection, based on said subscriber class, when it is impossible to connect a call because of shortage of vacant time slots, thereby ensuring a time slot for said H-channel terminal to make radio communication between said subsidiary station and said base station.

2. A multi-way multiplex communication system comprising:

(a) a subsidiary station covering terminals to each of which an analog line, a basic rate interface (BRI) line and a primary rate interface (PRI) line are connected; and

(b) a base station which assigns the requisite number of time slots to thereby

make radio communication with said subsidiary station in dependence on the number of vacant time slots between said subsidiary station and said base station, said subsidiary station including an informer which informs a H-channel terminal of whether a call can be made, based on information received from said base station,

said base station including:

(b1) a time slot manager which manages said vacant time slots;

(b2) a subscriber data manager which defines a subscriber class for each of terminals which subscriber class determines an order in using a time slot to make radio communication with a H-channel terminal;

(b3) an input device through which said subscriber class is input to said subscriber data manager; and

(b4) a time slot capture controller which, when it is impossible to make a call because of shortage of vacant time slots, controls a time slot, based on said subscriber class.

3. The multi-way multiplex communication as set forth in claim 2, wherein said time slot capture controller (c1) gives up assigning a time slot, (c2) waits until one of time slots becomes vacant, (c3) or mandatorily interrupts a channel of a subscriber now in communication to thereby make a vacant time slot, in accordance with said subscriber class.

4. A method of assigning a channel in a multi-way multiplex communication system comprising:

(a) a subsidiary station covering terminals to each of which an analog line, a basic rate interface (BRI) line and a primary rate interface (PRI) line are connected; and

(b) a base station which assigns the requisite number of time slots to thereby make radio communication with said subsidiary station in dependence on the number of vacant time slots between said subsidiary station and said base station, said method comprising the steps of:

(a) storing a subscriber class into said base station for each of terminals, said subscriber class determining an order in using a time slot to make radio communication with a H-channel terminal;

(b) monitoring vacant time slots on receipt of a request of making a call, from a terminal belonging to a first class among said subscriber class, said step (b) being to be carried out by said base station;

(c) informing said subsidiary station that it is impossible to assign a time slot, when a call cannot be made because of shortage of vacant time slots, said step (c) being to be carried out by said base station; and

(d) informing said H-channel terminal of inability of making a call, said step

(d) being to be carried out by said subsidiary station.

5. The method as set forth in claim 4, further comprising the steps of:

(e) informing said subsidiary station that said base station waits being assigned a time slot, on receipt of a request of making a call, from a terminal belonging to a second class among said subscriber class, said step (e) being to be carried out by said base station;

(f) recording and reserving presently vacant time slots, which are not captured even if a request of making a call is received from a terminal belonging to said first and second classes, said step (f) being to be carried out by said base station;

(g) monitoring time slots now being used, and capturing a time slot having been released after communication has been finished, then updating record of said time slots now being vacant, said step (g) being to be carried out by said base station;

(h) informing said subsidiary station through a C-channel that the requisite number of time slots have been captures, when said base station detects that the requisite number of time slots for making communication through a H-channel has been captured, said step (h) being to be carried out by said base station; and

(i) informing said H-channel terminal that it is now possible to make a call, said step (i) being to be carried out by said subsidiary station.

6. The method as set forth in claim 5, further comprising the steps of:

(j) recording and reserving time slots now being vacant, on receipt of a request of making a call, from a terminal belonging to a third class among said subscriber class, said step (j) being to be carried out by said base station;

(k) identifying classes of subscribers now using a time slot, and mandatorily releasing a time slot between said subsidiary station and said base station first in said first class, and then in said second class, until the requisite number of time slots for making communication through a H-channel is captured, said step (k) being to be carried out by said base station;

(l) recording and reserving the thus released time slots, and updating record

of said time slots now being vacant, said step (l) being to be carried out by said base station;

(m) informing said subsidiary station through a C-channel that the requisite number of time slots have been captures, when said base station detects that the requisite number of time slots for making communication through a H-channel has been captured, said step (m) being to be carried out by said base station; and

(n) informing said H-channel terminal that it is now possible to make a call, said step (n) being to be carried out by said subsidiary station.

7. The method as set forth in claim 6, further comprising the step of (o) informing a subscriber whose time slot has been mandatorily released during communication, that a line is now too busy to make communication, said step (o) being to be carried out by said subsidiary station to a terminal or by said base station to a public network.

8. The method as set forth in claim 4, further comprising the steps of:

(p) monitoring time slots now being vacant, on receipt of a request of making a call, from a terminal belonging to said first class, said step (p) being to be carried out by said base station;

(q) recording and reserving time slots now being vacant, when said subsidiary station judges that a calling party is a subscriber having high priority, based on a calling party number added to a message of request of making a call;

(r) identifying classes of subscribers now using a time slot, and mandatorily releasing a time slot between said subsidiary station and said base station first in

said first class, and then in said second class, until the requisite number of time slots for making communication through a H-channel is captured, said step (r) being to be carried out by said base station;

(s) recording and reserving the thus released time slots, and updating record of said time slots now being vacant, said step (s) being to be carried out by said base station;

(t) informing said subsidiary station through a C-channel that the requisite number of time slots have been captures, when said base station detects that the requisite number of time slots for making communication through a H-channel has been captured, said step (t) being to be carried out by said base station; and

(u) informing said H-channel terminal that it is now possible to make a call, said step (u) being to be carried out by said subsidiary station.

9. The method as set forth in claim 8, further comprising the step of (v) informing a subscriber whose time slot has been mandatorily released during communication, that a line is now too busy to make communication, said step (v) being to be carried out by said subsidiary station to a terminal or by said base station to a public network.